

Comparisons of Job Characteristics

Focus Occupation: **Materials Scientists (19-2032)**

Associated Occupation: **Materials Engineers (17-2131)**

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 88

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Engineering and Technology	5.7	18.9	16.2	<	Expanded education and/or training may be required
Chemistry	4.8	15.3	23.3	>>	Current knowledge level is likely more than sufficient
Physics	4.3	10.6	9.6	<	Expanded education and/or training may be required
Design	5.2	7.9	5.2	<<	Extensive education and/or training may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 95

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Science	4.5	13.0	16.8	>>	Skill level is likely more than sufficient
Complex Problem Solving	9.1	12.0	12.0	0	Current skill level may be sufficient
Operations Analysis	5.0	11.7	11.7	0	Current skill level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 99

Focus Occupation: Materials Scientists (19-2032)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Oral Expression	12.4	15.3	15.4	0	Current ability level may be sufficient
Problem Sensitivity	11.1	14.7	13.5	0	Current ability level may be sufficient
Deductive Reasoning	10.6	14.2	13.8	0	Current ability level may be sufficient
Written Comprehension	11.0	14.2	14.2	0	Current ability level may be sufficient
Inductive Reasoning	10.2	13.9	14.1	0	Current ability level may be sufficient
Written Expression	9.8	13.8	13.4	0	Current ability level may be sufficient
Category Flexibility	9.0	11.5	11.9	0	Current ability level may be sufficient
Originality	7.6	10.6	12.4	>	Current ability level is likely sufficient
Mathematical Reasoning	6.3	10.2	10.3	0	Current ability level may be sufficient
Number Facility	6.3	9.2	8.4	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 93

Focus Occupation: Materials Scientists (19-2032)
Associated Occupation: Materials Engineers (17-2131)

Work Activities	Exclusivity of Activity
Advise clients or customers	19
Analyze scientific research data or investigative findings	27
Collect scientific or technical data	30
Communicate technical information	4
Conduct laboratory research or experiments	57
Conduct standardized qualitative laboratory analyses	62
Conduct standardized quantitative laboratory analyses	62
Confer with engineering, technical or manufacturing personnel	25
Confer with research personnel	50
Confer with scientists	54
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop policies, procedures, methods, or standards	21
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Perform statistical analysis in physical science or geological research	71
Prepare reports	8
Prepare technical reports or related documentation	22
Recognize characteristics of metals	62

Resolve engineering or science problems	46
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use knowledge of materials testing procedures	70
Use library or online Internet research techniques	21
Use mathematical or statistical methods to identify or analyze problems	30
Use metal processing methodology	99
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17
Write business project or bid proposals	48

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 88

Focus Occupation: Materials Scientists (19-2032)
Associated Occupation: Materials Engineers (17-2131)

Tools and Technologies	Exclusivity
Cement and ceramics and glass industry machinery and equipment and supplies	40
Chemical evaluation instruments and supplies	10
Computers	1
Content authoring and editing software	1
Data management and query software	1
Development software	4
Electrical measuring and testing equipment	7
Electrochemical measuring instruments and accessories	9
Electronic manufacturing and processing machinery	56
Fluid mechanics equipment	11
Hydraulic presses	25
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory environmental conditioning equipment	24
Laboratory furnaces and accessories	26

Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Length and thickness and distance measuring instruments	2
Light and wave generating and measuring equipment	4
Liquid and gas flow measuring and observing instruments	15
Machine tools	7
Mechanical instruments	14
Metals and metallurgy and structural materials testing instruments	15
Network applications software	1
Non destructive examination equipment	13
Power tools	2
Rough and finishing tools	5
Rubber and plastic processing machinery and equipment and supplies	35
Soil measuring equipment	20
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Vision protection and accessories	3
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.